

CLAIMS

1 1. In a gas turbine engine which includes (1) an igniter,
2 (2) a cable running from an exciter to the igniter which delivers
3 electrical power to the igniter, (3) a first conductive shield
4 surrounding the cable and connected to the engine, and (4) a second
5 conductive shield extending from the external conductive shield and
6 surrounding the igniter, a method comprising:

- 7 a) maintaining a sensor adjacent the igniter;
8 b) detecting a current pulse in either the first or
9 second conductive shields, or both; and
10 c) issuing a signal indicating presence of spark when
11 a current pulse is detected.

1 2. In a gas turbine engine which includes (1) an igniter,
2 (2) a cable running from an exciter to the igniter which delivers
3 electrical power to the igniter, (3) a first conductive shield
4 surrounding the cable and connected to the engine, and (4) a second
5 conductive shield extending from the external conductive shield and
6 surrounding the igniter, apparatus comprising:

- 7 a) a coil adjacent the igniter;
8 b) means for detecting a current pulse in either the
9 first or second conductive shield, or both; and
10 c) means for issuing a signal indicating presence of
11 spark when a current pulse is detected.

1 3. Apparatus for detecting spark, comprising:

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2 a) a power source which applies a high voltage to a
3 conductor connected to a spark gap, to cause dielectric
4 breakdown in the spark gap;
5 b) a current path for carrying return current from the
6 spark gap to the power source when breakdown occurs;
7 c) a conductive shield around the conductor; and
8 d) a detector for detecting current in the conductive
9 shield, and issuing a signal indicating presence of spark
10 in response.

1 4. Apparatus according to claim 3, wherein the current path
2 leads to a system ground.

1 5. Apparatus according to claim 4, wherein the conductive
2 shield is connected to a system ground.

1 6. Apparatus according to claim 3, wherein the spark occurs
2 in a gas turbine engine.

1 7. Apparatus in a gas turbine engine, comprising:

2 a) an igniter which is
3 i) surrounded by a housing, and
4 ii) fed by a power cable which is surrounded
5 by a conductive shield which is connected to
6 the housing; and
7 b) a detector for

8 i) detecting current in the shield, housing,
9 cable, or a combination thereof, but without
10 contacting the cable, and,
11 ii) in response, issuing a signal indicating
12 presence of spark in the igniter.

1 8. Apparatus according to claim 7, wherein the engine powers
2 an aircraft, and the signal is delivered to a pilot station in the
3 aircraft.

1 9. Apparatus according to claim 7, wherein the detector
2 comprises:

3 c) a coil, adjacent the shield, in which currents are
4 induced.

1 10. Apparatus, comprising:

2 a) a gas turbine engine having a frame or casing having
3 a potential defined as DC ground;
4 b) an igniter in the engine;
5 c) a supply cable which supplies current pulses to the
6 igniter;
7 d) a conductive shield around the supply cable, which
8 connects to a housing of the igniter, wherein the shield
9 and the housing are connected to said ground potential;
10 e) an exciter which provides said current to the
11 igniter, and which receives return current from the

12 igniter through
13 i) said shield, and
14 ii) a second path;
15 f) a detector adjacent said housing, which detects one
16 or more of the following:
17 i) current pulses in the cable;
18 ii) current pulses in the housing; or
19 iii) differential between current pulses in
20 the cable and current pulses in the housing.

1 11. Apparatus according to claim 10, wherein the second path
2 comprises the engine frame or casing.

1 12. Apparatus according to claim 10, wherein the detector
2 comprises a coil.